

addition, claims 4, 9 and 12 are objected to because of informalities. Favorable reconsideration of this application is requested in view of the following remarks. For the reasons set forth below, Applicant respectfully submits that the claimed invention is allowable over the cited references.

Applicant respectfully traverses each of the § 102(b) and § 103(a) rejections.

With respect to the objections to claims 4, 9 and 12, Applicant respectfully traverses the objections. Regarding claim 4, the Office Action states, “[t]he thickness of the diffusion barrier, 1.0 micron [recited in claim 4] is within the range of the limitation over the thickness in claim 3.” It is unclear to Applicant why a claimed range that overlaps or lies inside another claimed range of the same patent application is grounds for a claim objection. 37 CFR § 1.75(b) provides “[m]ore than one claim may be presented provided they differ substantially from each other and are not unduly multiplied.” See also MPEP § 2173.05(n). Claim 3 encompasses a semiconductor chip (having circuitry) that may have a thinner diffusion barrier layer thickness, in the range of at least 0.5 micron but less than 1.0 micron, which claim 4 does not encompass. Claims 3 and 4 clearly differ from one another substantially, and present no difficulty in understanding the scope of protection. 37 CFR § 1.75(g) only requires that “[t]he least restrictive claim should be presented as claim number 1, and all dependent claims should be grouped together with the claim or claims to which they refer to the extent practicable.” Therefore, Applicant requests that the objections to claim 4 be withdrawn.

Regarding claims 9 and 12, claim 12 is amended with this Response to correct a typographical error of the base claim from which it is intended to depend. Claim 12, as filed, was arranged to immediately follow independent claim 11. Claim 12, as amended, is distinct from claim 9 since claim 12 now properly depends from independent claim 11 with which it is grouped. Therefore, Applicant requests that the objections to claims 9 and 12 be withdrawn.

The § 102(b) rejection of claims 1, 2, 5-8, 10-11 and 14 are improper because the cited *Camilletti et al.* reference fails to establish a *prima facie* case of anticipation of the claims, as amended. The asserted reference fails to correspond to the claimed invention, or show all aspects claimed; therefore, the reference cannot be used to maintain the rejection under § 102(b). Specifically, Applicant fails to see among the cited portions of the reference, *inter alia*, features completely corresponding to the claimed limitations of at least two entire sides of the diffusion layer being insulated by the passivation material, and a metal layer at least partially over, and in contact with, a portion of the passivation material not over the diffusion barrier layer. Therefore,

the cited reference fails to establish a *prima facie* case of anticipation, and Applicant requests that the § 102(b) rejection of claims 1, 2, 5-8, 10-11 and 14, as amended, be removed.

With particular respect to claim 10, Applicant also fails to see how the *Camilletti et al.* reference identically teaches the metal bond pad and the metal layer including the same type of metal. The cited portion of the reference (col. 8, line 8-14) provides:

... bond pad 11A can be sealed by covering it with a non-corroding conductive metal layer 16A, although in some cases, a corrodible material can be employed. Layer 16A is most preferably a gold or solder (95PB-5Sn) bump, although it can be any metal which is stable in the environment, electrically conductive, and useful for interconnecting circuits of semiconductor die 30A. Some suitable materials include copper, silver, silver filled (sic) epoxy, silver-filled polyimide, silver-filled polysiloxanes, silver-filled silicone elastomers, or silver-filled silicone resins.

Therefore, the cited reference fails to establish a *prima facie* case of anticipation, and Applicant requests that the § 102(b) rejection be removed.

With respect to claims 3-4, 9 and 12-13, Applicant respectfully submits that the rejection under § 103(a) is improper because the cited references (the *Camilletti et al.* reference in view of the *Shangguan et al.* reference) fail to establish a *prima facie* case of obviousness. Neither of the cited references addresses the same problem as the claimed invention, or shows all aspects claimed. Therefore, the references, either individually or in combination, cannot be used to maintain the rejection under § 103(a).

With respect to the § 103(a) rejections of dependent claims 3-4, 9 and 12-13, each of these claims depend indirectly from independent claim 1 or independent claim 11, each of which being patentably distinct for the reasons set forth above. As indicated at MPEP § 2143.03, if an independent claim is nonobvious under 35 U.S.C. § 103, then any claim depending therefrom is nonobvious. *In re Fine*, 837 F.2d 1071, 5 USPQ2d 1596 (Fed. Cir. 1988). Therefore, Applicant believes dependent claims 3-4, 9 and 12-13, when considered with their patentably-distinct base and intervening claims, to be allowable and Applicant requests that the § 103(a) rejection of these claims be removed.

Additionally, the § 103(a) rejection of claims 3-4, 9 and 12-13 over the asserted references fails to establish a *prima facie* case of obviousness by failing to provide, *inter alia*, a prior art teaching or suggestion of motivation for making the asserted modification of the *Camilletti et al.* reference. A *prima facie* case of obviousness requires both: (1) complete

correspondence between the asserted prior art and the claimed invention; and (2) evidence of motivation that the skilled artisan would be lead to combine the asserted teachings. In this instance, no evidence has been presented in support of the assertion that the skilled artisan would be led to modify the teachings of the *Camilletti et al.* patent with the asserted features of the *Shangguan et al.* reference.

The Office Action acknowledges that the *Camilletti et al.* reference fails to teach, *inter alia*, the claimed thickness of the diffusion barrier and metal layers. The Office Action attempts to overcome this deficiency in the teaching of the *Camilletti et al.* reference by identifying allegedly corresponding limitations in the *Shangguan* reference. However, this attempt to find complete correspondence between the asserted prior art and the claimed invention attempts only to satisfy the first component of the *prima-facie* obviousness test. No evidence of motivation has been presented for modifying the *Camilletti et al.* patent as asserted in the Office Action, and the record is devoid of any evidence whatsoever that might be construed to satisfy the above-mentioned second component of the *prima-facie* obviousness test.

In order to modify the *Camilletti et al.* reference, the Examiner must specifically identify clear and particular reasons that indicate why one of ordinary skill in the art would have been motivated to select the missing claim limitations and modify the *Camilletti et al.* reference with them. (See, e.g., *In re Dembiczak*, 175 F.3d 994, 50 U.S.P.Q.2d 1614 (Fed. Cir. 1999)). In the present case, no evidence is provided in the prior art that indicates why one of ordinary skill in the art would be motivated to look to modify the *Camilletti et al.* reference with teachings of the *Shangguan et al.* reference.

The Office Action merely suggests that "It would have been obvious to one of ordinary skill in the art at the time the invention was made to incorporate the teaching of Shangguan et al. into the device taught by Camilletti et al. since such thickness of the diffusion barrier layer will improve the stability of the device and alleviate the interaction between the metal layers."

Such reasoning is, first of all, conclusory. No supporting evidence is provided that the stability of the resulting device would be improved, or that interaction between the metal layers would be alleviated. Secondly, the reasoning "will improve the stability of the device" and "alleviate the interaction between the metal layers" is too general because it could cover almost any alteration contemplated of the *Camilletti et al.* reference and does not address why this

specific proposed modification would have been obvious. Thirdly, the Office Action does suggest that, other than applicant's disclosure, there is anything in either of the references that would suggest modifying the *Camilletti et al.* reference. Therefore, the rejections are improper for lack of motivation and fail to establish a *prima facie* case of obviousness. Applicant requests that the § 103(a) rejection of claims 3-4, 9 and 12-13 be removed.

In view of the claim amendments, and distinguishing remarks above, Applicant believes the present application to be in condition for allowance. Withdrawal of all rejections is respectfully requested.

If appropriate, please charge charge/credit any additional, necessary fees to Deposit Account No. 50-0996 (PHA 51243A).

Should there be any remaining issues that could be readily addressed over the telephone, the Examiner is asked to contact the attorney overseeing the application file, Peter Zawilski, Esq., of Philips Corporation at (408) 617-4832

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